BEDES - Grouping Structure Options

January 22nd 2014

- Most TWG members appeared to feel strongly or be leaning toward a flat structure
    - it is more extensible, easier to modify, expand and utilize for different purposes
    - However, there was a range of opinions (and many questions) about what that meant in practice.
    - Using Tag approach might be an option

Pros and Cons

Flatter

- **More fields, less complex structure**
- Pros:
  - Simpler specification
  - Easier to modify and expand
  - More flexible to apply in different applications based on use cases
- Cons:
  - More fields
  - Relies more on users or software implementation to ensure data entry is complete and that it can be "rolled up" (e.g. you always want 'mammal' if you have 'cat')
  - Potential for non-logical combinations, (shouldn't be able to say 'cat,' and 'reptile')

More Hierarchical

- **Less fields, more complex structure**
- Pros:
  - Less fields to fill in, data is more compact
  - Easier to "roll up" data
  - Forces user to make logical choices
  - Can help ensure completeness of data entry
- Cons:
  - hard to anticipate everything and describe all possible combnations
  - Results in much more complex specification
  - The question of order of levels of hierarchy becomes important

Option 1. Totally flat

Animal Type
{Enumerated List}
- Mammal
- Reptile
- Insect
etc.

Animal Sub-Type
{Enumerated List}
- Cat
- Dog
- Horse
- Lizard
- Snake
- Turtle
- etc.

Tail
{Boolean}
- Yes
- No

Legs
{integer}
- e.g. 4

KEY:
Data field name
{Data field type}
- Example value

Example record

Field	Value
Animal Type	Mammal
Animal Sub-Type	Cat
Tail	Yes
Legs	4

Option 2. Hierarchical only when describing the same info at a more granular level

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Animal Type
{Enumerated List}
- *Mammal*
- *Reptile*
- *Insect*
- *etc.*

Tail
{Boolean}
- *Yes*
- *No*

Legs
{integer}
- *e.g. 4*

Mammal Type
{Enumerated List}
- *Cat*
- *Dog*
- *Horse*
- *etc.*

Reptile Type
{Enumerated List}
- *Lizard*
- *Snake*
- *Turtle*
- *etc.*
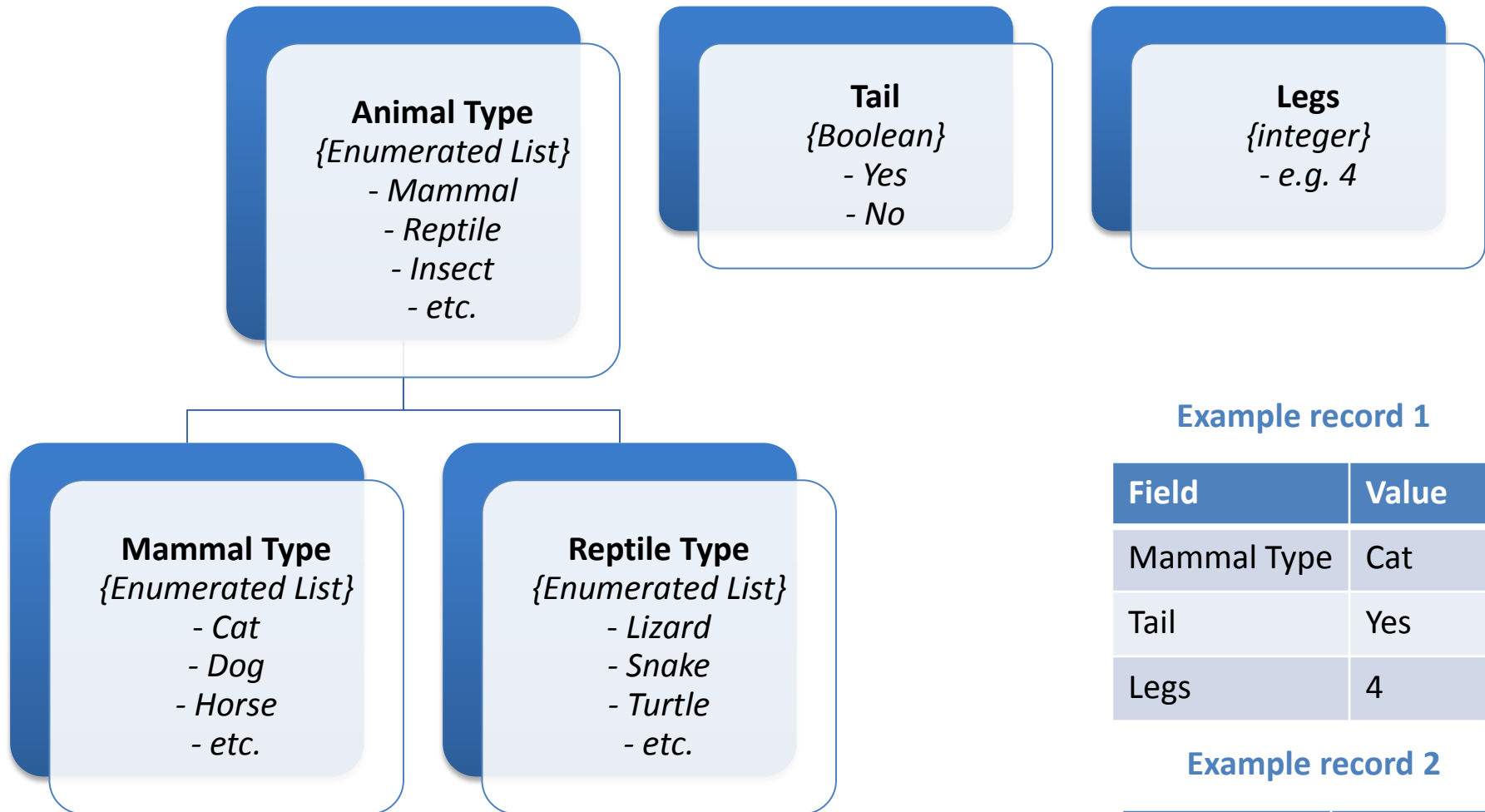
Example record 1

Field	Value
Mammal Type	Cat
Tail	Yes
Legs	4

Example record 2

Field	Value
Animal Type	Mammal
Legs	2

Option 3. Full hierarchy

Animals

Mammals

Reptiles

Mammals with Tails

Mammals without Tails

Bipeds
{list}
- Kangaroo

Quadrupeds
{list}
- Cat
- Dog
- Horse

Example record

Field	Value
Quadruped Mammal with Tail	Cat
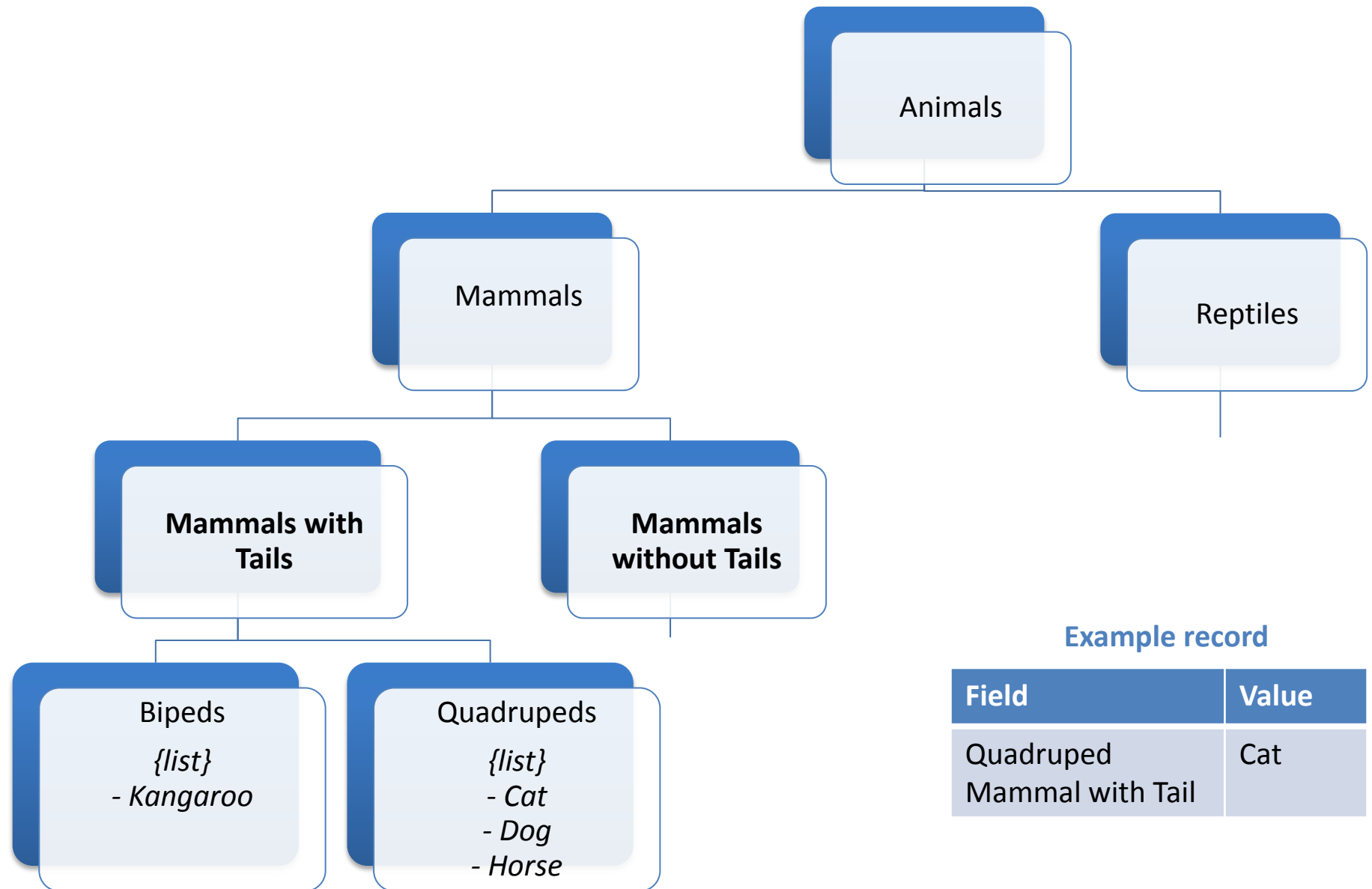
Summary: Non-Building Example Grouping Options

1. Totally Flat

Animal type - {Enum. List}
- *Mammal*
- *Reptile*
- *Insect*

Animal Subtype - {Enum. List}
- *Cat*
- *Dog*
- *Horse*
- *Lizard*
- *Snake*

Tail *{Boolean}*
- *Yes*
- *No*

Legs *{integer}*
- *e.g. 4*

2. Hierarchical sub-types, but separate attributes

Animal Type *{Enum List}*
- **Mammal** *{Enum List}*
    - *Cat*
    - *Dog*
    - *Horse*
- **Reptile {***Enum List***}*
    - *Lizard*
    - *Snake*

Tail *{Boolean}*
- *Yes*
- *No*

Legs *{integer}*
- *e.g. 4*

3. Fully Hierarchical

Animal Type
- Mammal
    - With Tail
        - **Biped** *{Enum List}*
            - *Kangaroo*
        - **Quadriped**
            - *Cat*
            - *Dog*
            - *Horse*
    - Without Tail
        - **Biped**
            - *Human*
        - **Quadriped**
            - *Sloth*
- Reptile
    - With Tail
        - Etc

Current structure – technically flat but has an implied hierarchy

	Site **Residential Facility** **Commercial Facility** **Activity Area**
Activity Type	**A space or area within a building designated for a particular activity**
	Vacant
	Commercial - Uncategorized
	Office - Uncategorized
	Office - Administrative/professional
	Office - Bank/other financial
	Office - Government
	Office - Medical non diagnostic
	Office - Mixed use
	Office - Other
	Laboratory
	Warehouse - Uncategorized
	Warehouse - Refrigerated
	Warehouse - Non-refrigerated
	Warehouse - Distribution/Shipping center
	Warehouse - Self-storage
	Food Sales
	Public Assembly - Uncategorized
	Public Assembly - Entertainment/culture
	Public Assembly - Movie Theater
	Public Assembly - Drama theater
	Public Assembly - Large Hall

Grouping Structures - Options

Option 1 (Flat)

Commercial Activity Type *{List}*
- *Office*
- *Warehouse*
- *Retail*

Commercial Sub-Type – *{List}*
- *Admin/Professional*
- *Bank*
- *Government*
- *Self Storage*
- *Distribution Center*
- *Big Box*
- *Shopping Mall*

Refrigerated *{Boolean}*
- *Yes*
- *No*

Conditioned Floor Area *{integer}*
- *e.g. 100,000 SF*

Option 2 - hybrid

Commercial Type *{List}*
- **Office** *{List}*
  - *Admin/Professional*
  - *Bank*
  - *Government*
- **Warehouse {List}**
  - *Self Storage*
  - *Distribution Center*
- **Retail**
  - Big Box
  - Shopping Mall

Refrigerated *{Boolean}*
- *Yes*
- *No*

Conditioned Floor Area *{integer}*
- *e.g. 100,000 SF*

Option 3 – Full Hierarchy

Activity Type
- Office
- Retail
- Warehouse
  - **Self Storage** *{List}*
    - *Refrigerated*
    - *Non-Refrigerated*
  - **D/S Center** *{List}*
    - *Refrigerated*
    - *Non-Refrigerated*

Grouping Structures – Options – BEDES test mod

Tagged descriptions concept for consideration

Activity Area		
Activity Type	A space or area **<Activity Area>/Activity Type** within a building designated for a ***#particular activity*** within a **<Commercial Facility>** within a **<Site>**.	CONSTRAINED LIST
		Vacant
		Commercial
		Office
		Laboratory
		Warehouse
		Food Sales
		Convenience store
		Convenience store with gas station
		Grocery store/food market
		Public Safety
		Health Care
		Religious worship
		Public Assembly
		Education
		Food Service
		Nursing Home

- Use Reference Tags as a way to define structural relationships between field names within a relatively flat schema
- Reference Tags can help the reader (human or software parser) more easily see inter-field associations in a many-to-many relationship
- The tagged field name descriptions can better inform the reader on which dependent fields are needed for a primary field being considered

- What is the best Grouping/Hierarchy Structure for the next BEDES version?

- Would it be useful to have BEDES category tags imbedded within the field name descriptions?